



Industrial Technology
Stage 5 - Year 10
Children's Table and Chairs
Model: Dowell Joint



Contents

1. Rationale	3
2. Description of project.....	3
3. Materials	4
4. Cutting list and Costing	5
5. Construction Process (Class Task).....	6
6. Engineering Drawings	8

1. Rationale

The purpose of this project is to design, develop and construct a project from a set of specifications. Students are to complete design research. This will hopefully allow greater understanding of the purpose of the project as well as the design and construction methods selected.

Design development resulting in individualisation of project is encouraged. An accompanying Portfolio will document all of these processes.

2. Description of project

The Children's table and chairs is designed to be a useful item for families of all ages in an average Australian home. This project is designed to be taken home by students and used practically in the home, it should be a visual reminder in years to come, of the usefulness the Stage 5 Industrial Technology course was. It also allows family member to see, use and appreciate something that the student has made.

The Children's table and chairs employs many of the techniques used in larger projects and is designed as part of a sequenced progression of skill building. This is especially helpful for those students looking at completing Industrial Technology or Design and Technology in Stage 6. Widening Joints, leg and rail construction, mortise and tenon, doweling, planing and routed edge detailing are all elements of the project.

3. Materials

Radiata Pine is native to the central coast of California but is widely planted in Australia and New Zealand. It makes up 28% of Tasmania's timber plantations and is an environmentally sustainable softwood popular in all types of construction and decorative uses. These include framing, lining, glue laminated beams, veneer and plywood. It can be used for many exposed structural and non-structural applications if it is treated with the right preservatives.

The texture of Radiata Pine is fine, but uneven, and knots are common. The timber is fairly soft and has a low density, often with very wide annual growth rings. The sapwood is white to pale yellow, but often indistinguishable from the heartwood, which is light brown to yellow. The grain is usually straight, apart from a central core of 100mm, which can twist if the moisture content of the timber changes.

Radiata Pine is easy to work, apart from the knots, and it readily accepts preservatives.

www.woodsolutions.com.au

4. Cutting list and Costing

Table – Pine (One table per group)

Item	Timber size (mm)	Length (mm)	Quantity	\$ per meter	Cost (\$)
Table Top	140 x 19	800	4	\$5.36	\$17.15
Table Leg	42 x 42	480	4	\$4.10	\$7.87
Long Rail	70 x 19	680	2	\$2.71	\$1.84
Short Rail	70 x 19	380	2	\$2.71	\$1.84
				Total	\$28.70

Chairs – Pine (this price is for one chair only)

Item	Timber size (mm)	Length (mm)	Quantity	\$ per meter	Cost (\$)
Chair Top	140 x 19	265	2	\$5.36	\$2.84
Left Back Leg	32 x 32	600	1	\$2.98	\$1.79
Right Back Leg	32 x 32	600	1	\$2.98	\$1.79
Left Front Leg	32 x 32	300	1	\$2.98	\$0.89
Right Front Leg	32 x 32	300	1	\$2.98	\$0.89
Left/Right Bottom Rail	42 x 19	196	2	\$1.92	\$0.75
Front Bottom Rail	42 x 19	196	1	\$1.92	\$0.38
Front Rail	42 x 19	196	1	\$1.92	\$0.38
Back Rail	70 x 19	196	1	\$1.92	\$0.38
Left Rail	42 x 19	196	1	\$1.92	\$0.38
Right Rail	42 x 19	196	1	\$1.92	\$0.38
				Total	\$10.85

Note: you need to make two chairs so everything will be doubled in this table.

5. Construction Process (Class Task)

Fill this section with each construction stage

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

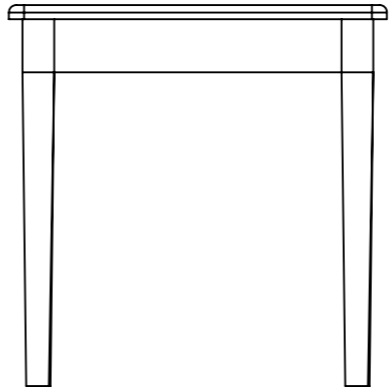
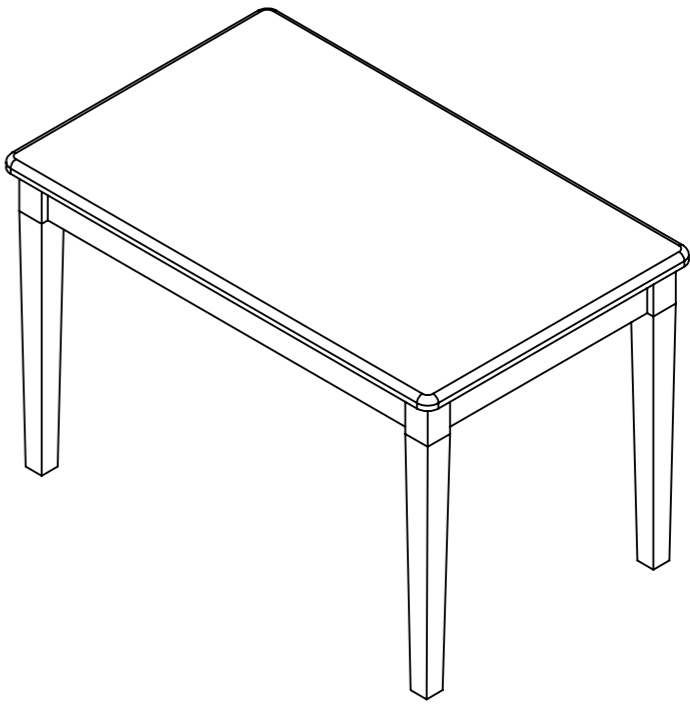
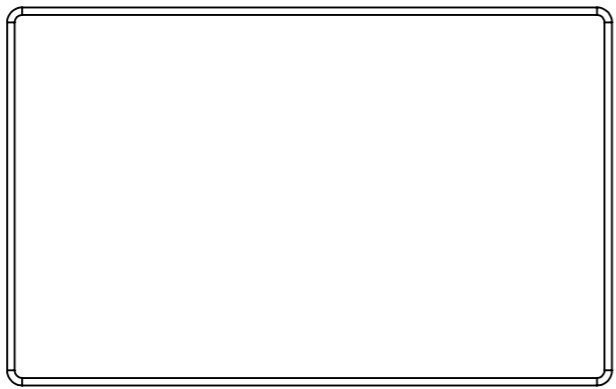
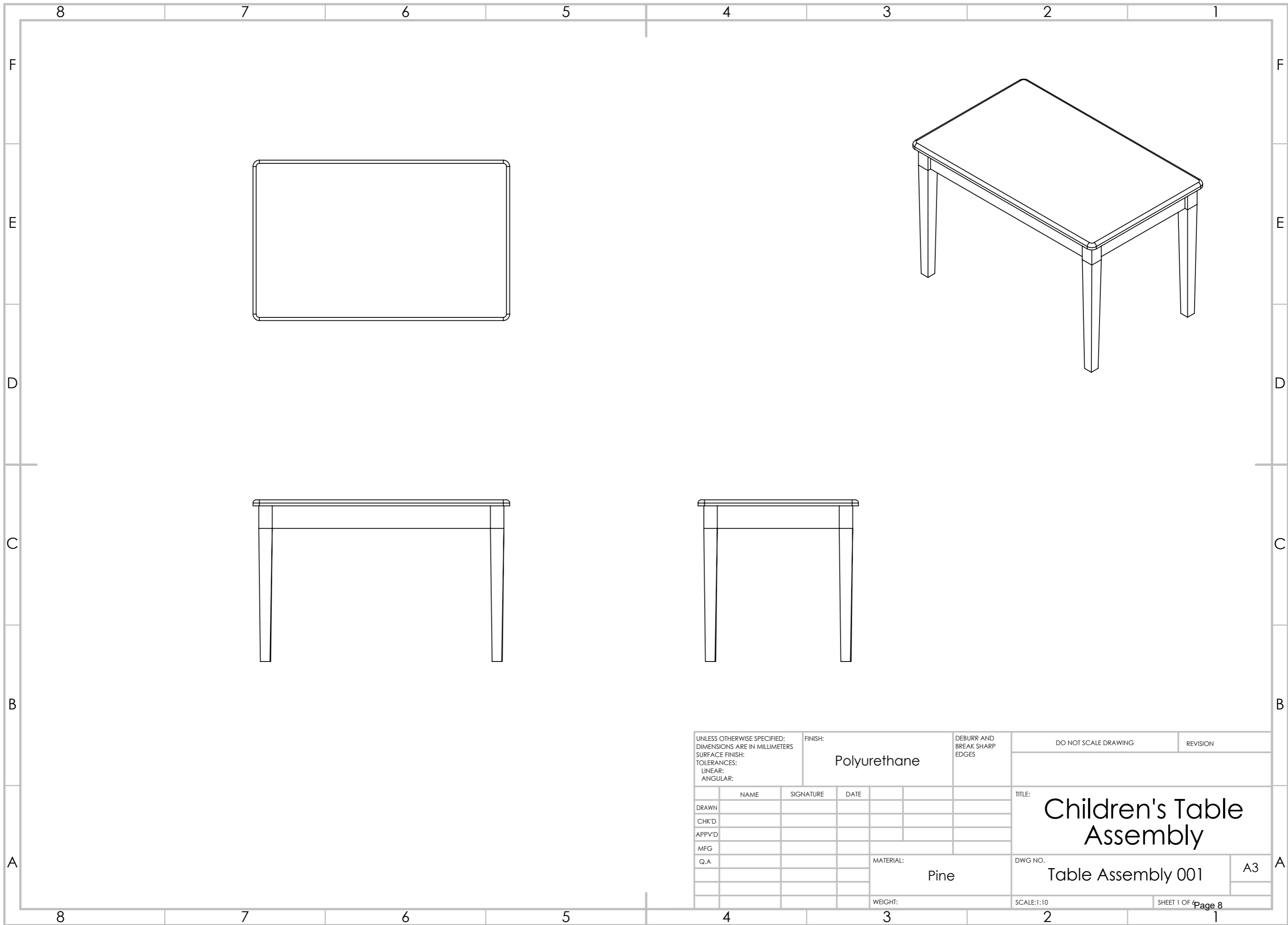
14.

15.

16.

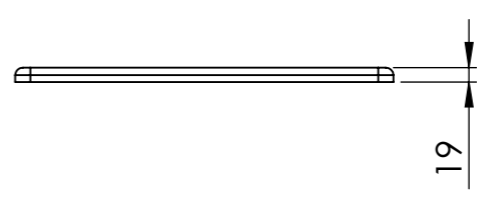
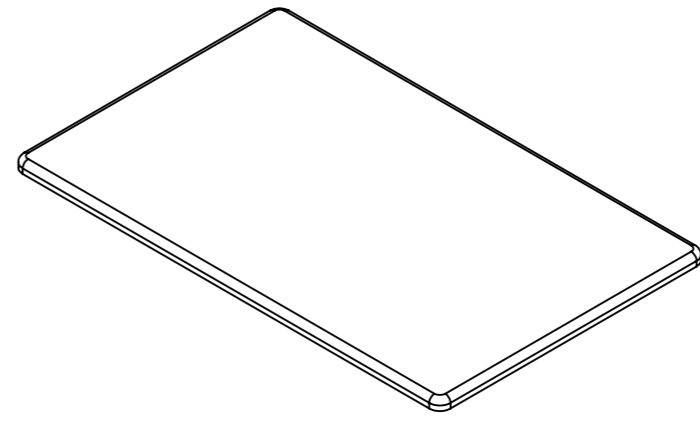
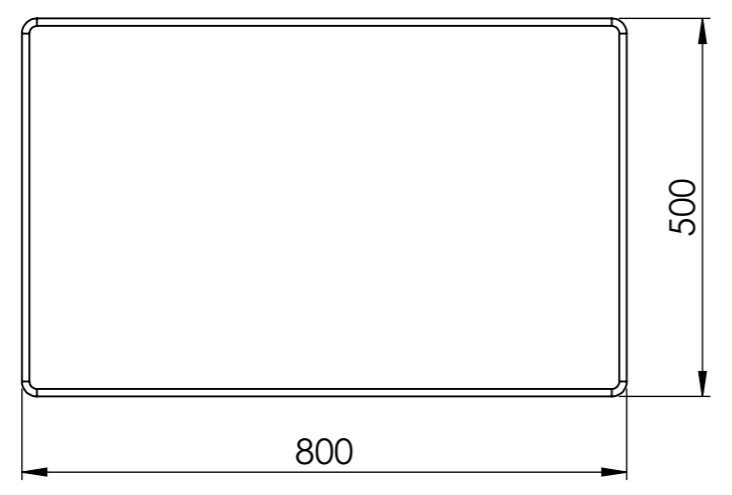
17.

18.



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
SURFACE FINISH:										
TOLERANCES:										
LINEAR:										
ANGULAR:										
	NAME	SIGNATURE	DATE			TITLE: Children's Table Assembly				
DRAWN										
CHK'D										
APPV'D										
MFG										
Q.A						MATERIAL: Pine		DWG NO. Table Assembly 001		A3
						WEIGHT:		SCALE:1:10		SHEET 1 OF 4 Page 8

8	7	6	5	4	3	2	1
ITEM NO.	Part Name	Length	Width	Thickness	QTY.		
1	Table Top	800	140	19	4		

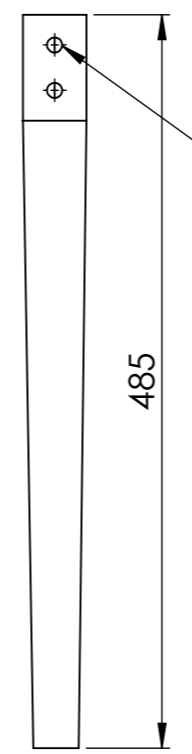
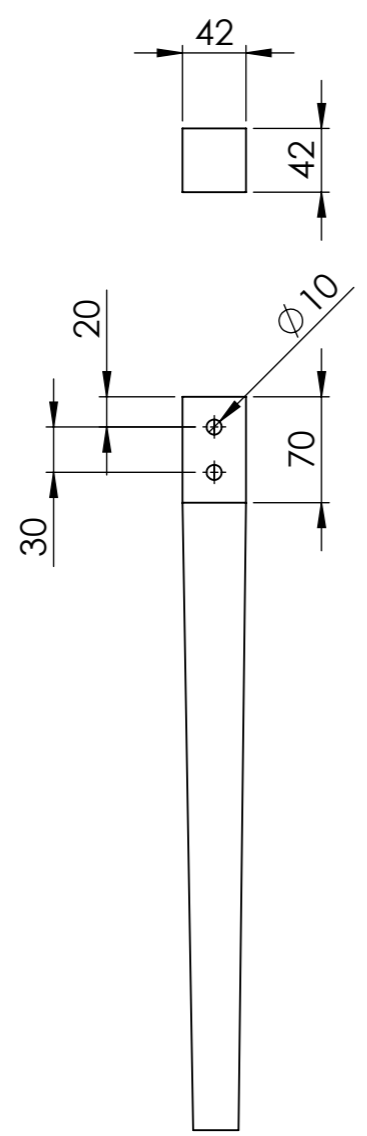


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
SURFACE FINISH:										
TOLERANCES:										
LINEAR:										
ANGULAR:										
DRAWN			NAME		SIGNATURE		DATE		TITLE: Childrens Table Assembly	
CHK'D										
APPV'D										
MFG										
Q.A							MATERIAL: Pine		DWG NO. Table Top 002	
							WEIGHT:		SCALE:1:10	
									SHEET 2 OF 4 Page 9	

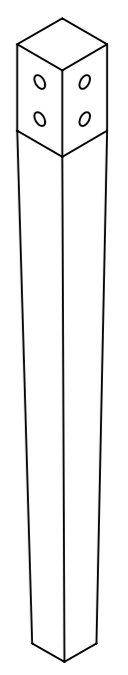
F
E
D
C
B
A

F
E
D
C
B
A

8	7	6	5	4	3	2	1
ITEM NO.	Part Name	Length	Width	Thickness	QTY.		
2	Table Leg - Dowell Joint	485	42	42	4		



All dowell holes are 21mm deep.

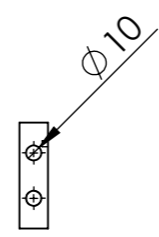
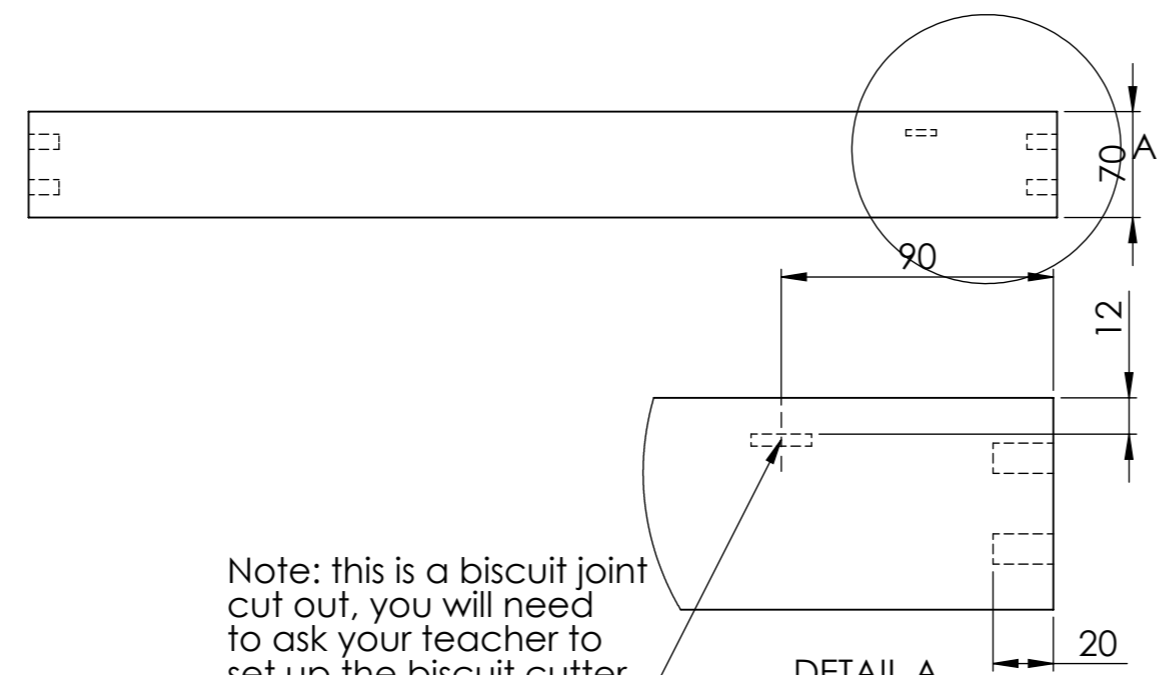
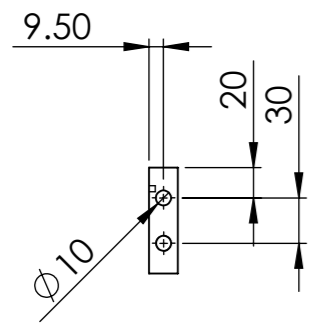
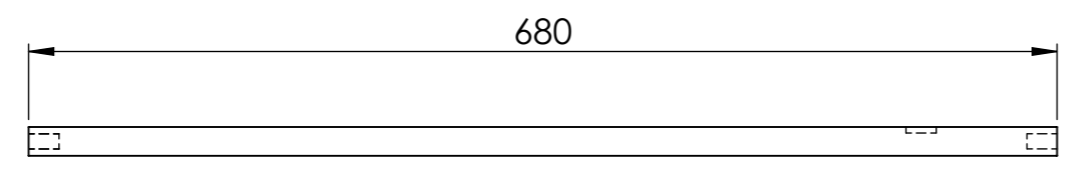
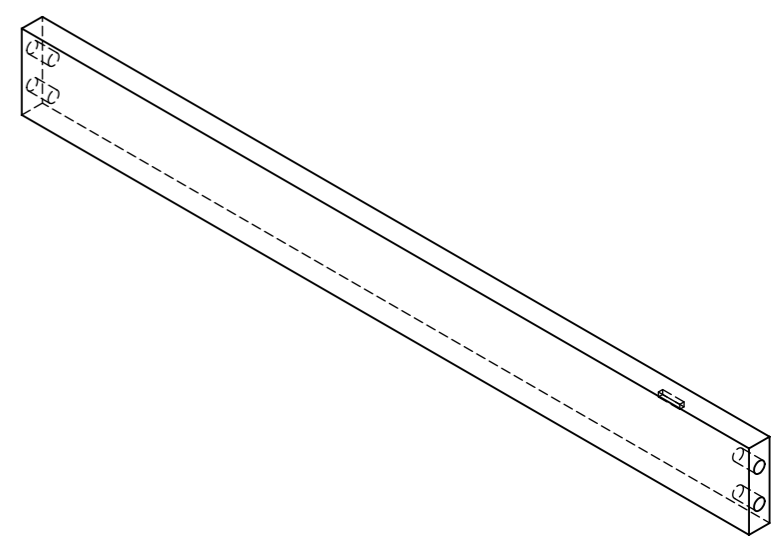


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN							TITLE: Childrens Table Assembly				
CHK'D							DWG NO. Table Leg 003				
APPV'D							MATERIAL: Pine				
MFG							SCALE:1:5				
Q.A							WEIGHT:				
							SHEET 3 OF 4 Page 10				

F
E
D
C
B
A

F
E
D
C
B
A

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
3	Long Rail	680	70	19	2

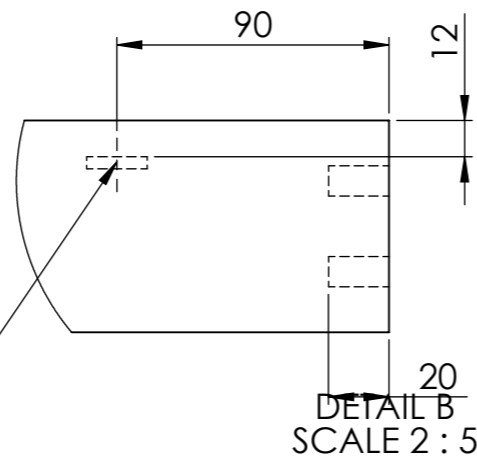
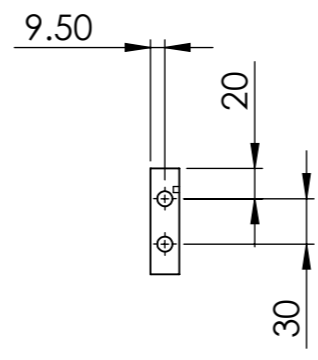
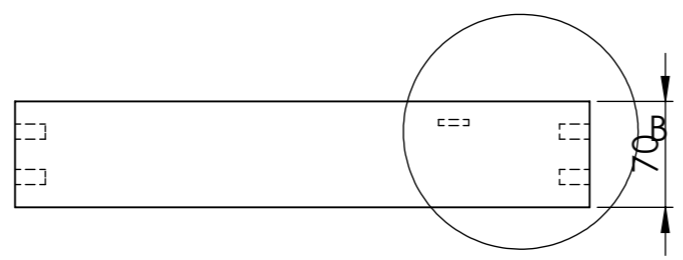
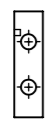
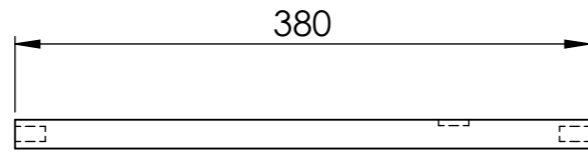
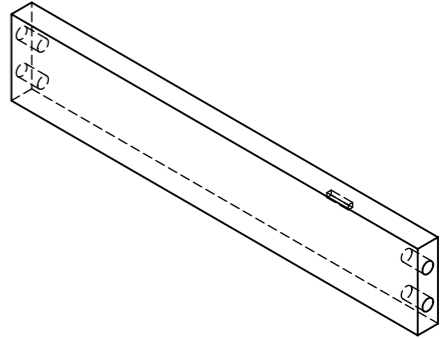


Note: this is a biscuit joint cut out, you will need to ask your teacher to set up the biscuit cutter.

DETAIL A
SCALE 2 : 5

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME			SIGNATURE			DATE		
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL: Pine			TITLE: Childrens Table Assembly		
						DWG NO. Long Rail 004			A3		
						WEIGHT:			SCALE:1:5		
									SHEET 4 OF 4 Page 11		

8	7	6	5	4	3	2	1
ITEM NO.	Part Name	Length	Width	Thickness	QTY.		
4	Short Rail	380	70	19	2		



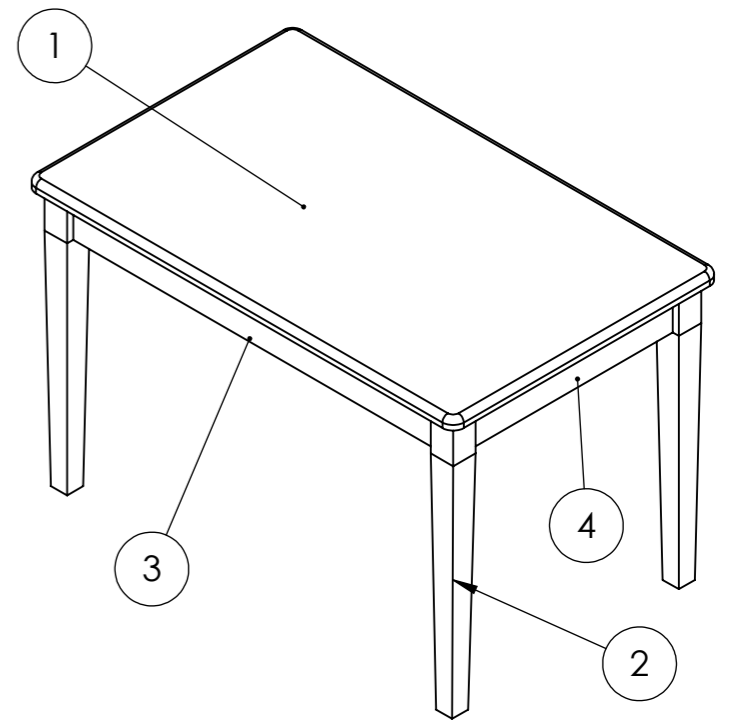
Note: this is a biscuit joint cut out, you will need to ask your teacher to set up the biscuit cutter.

DETAIL B
SCALE 2 : 5

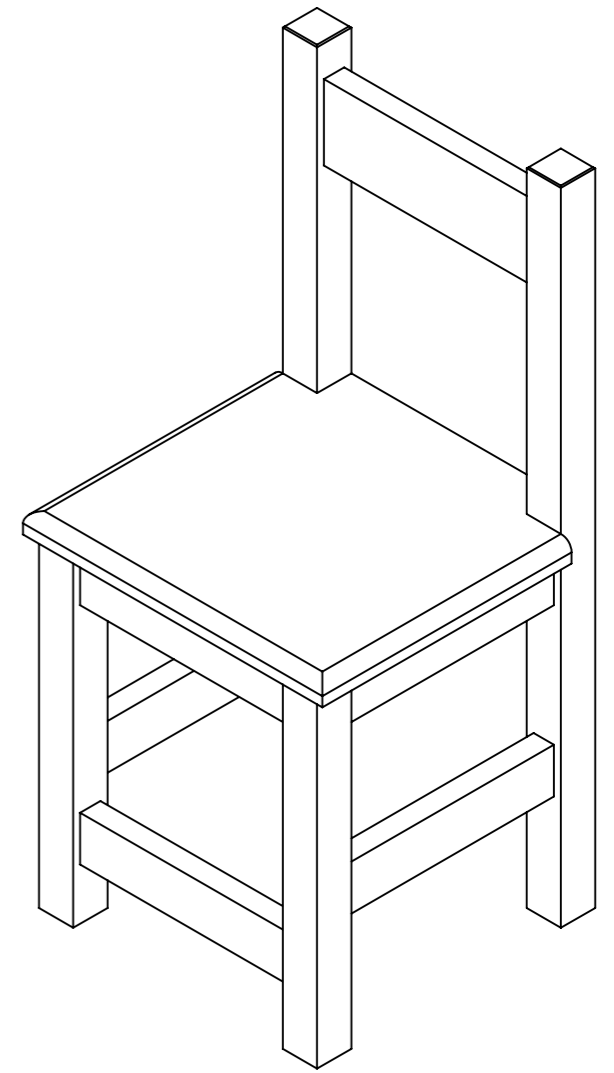
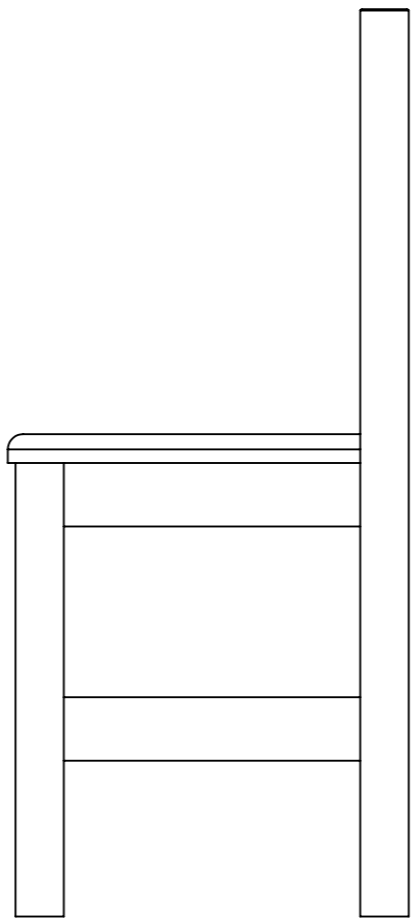
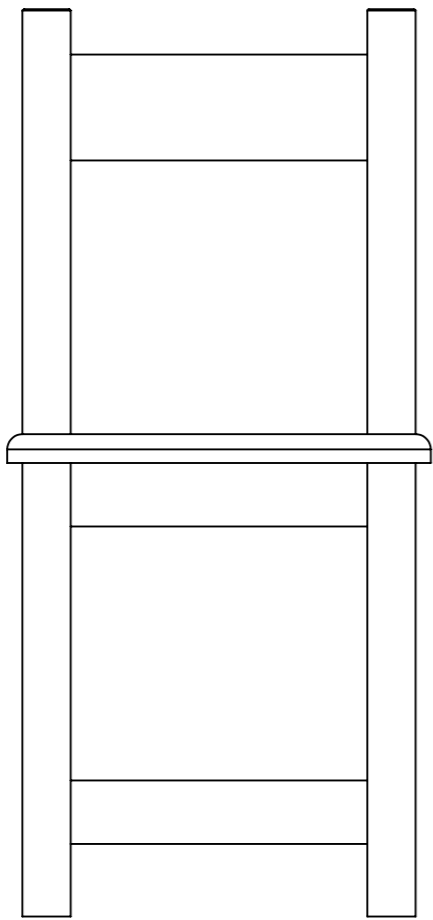
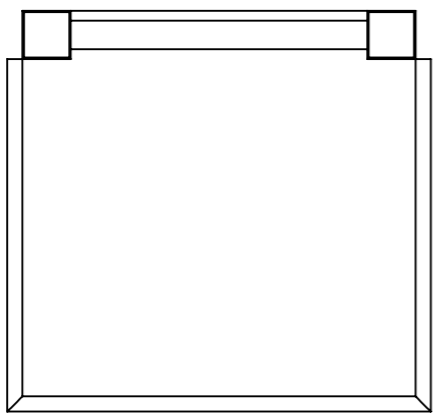
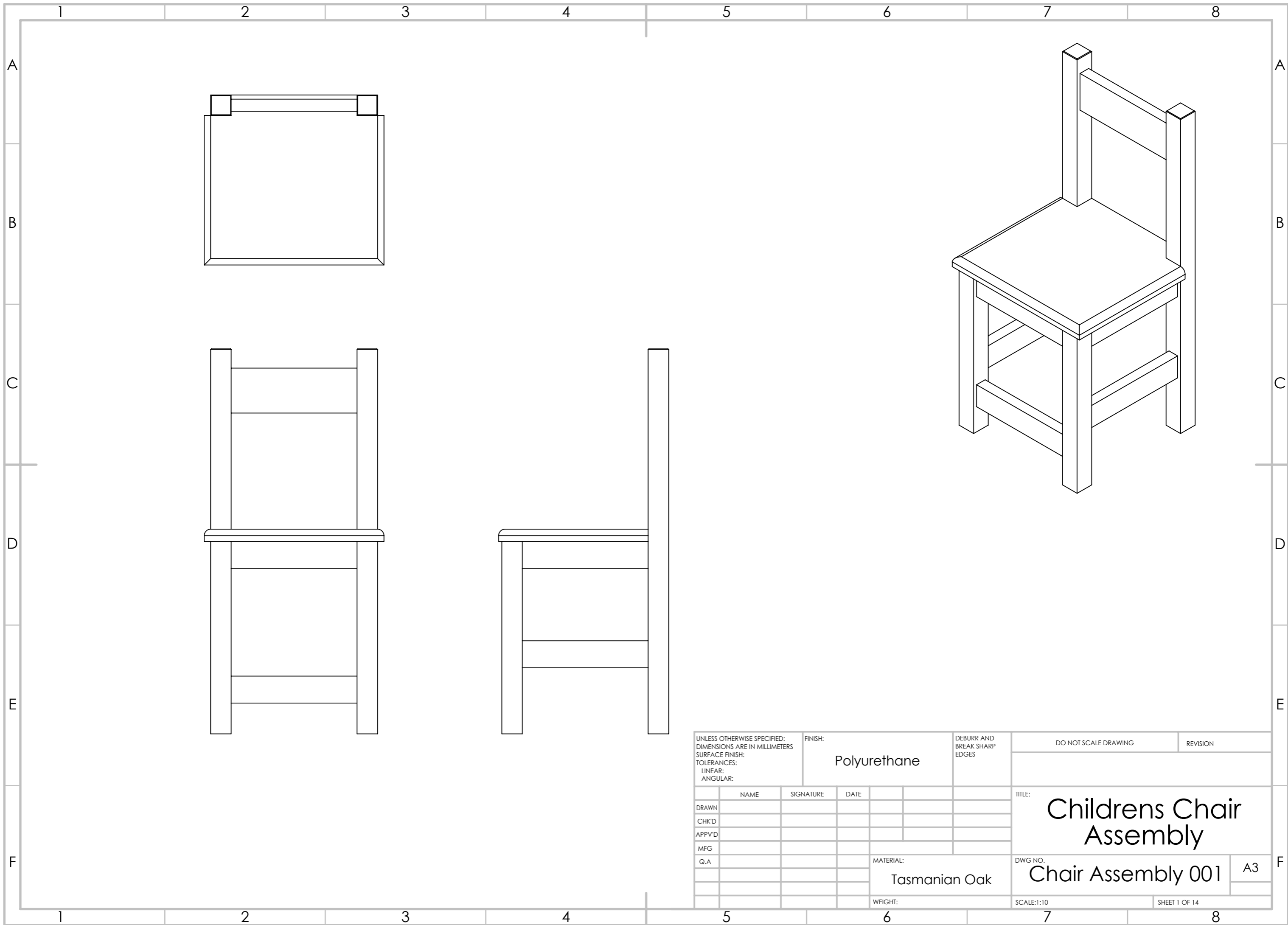
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS				FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
SURFACE FINISH:											
TOLERANCES:											
LINEAR:											
ANGULAR:											
DRAWN		NAME		SIGNATURE		DATE		TITLE:		Childrens Table Assembly	
CHK'D								DWG NO.:		A3	
APPV'D								MATERIAL:		Short Rail 005	
MFG								Pine			
Q.A								WEIGHT:		SCALE:1:10	
								SHEET 5 OF 5		Page 12	

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
1	Table Top	800	140	19	4
2	Table Leg	485	42	42	4
3	Long Rail	680	70	19	2
4	Short Rail	380	70	19	2

Note: mark all parts out first and double check them before you start cutting anything.

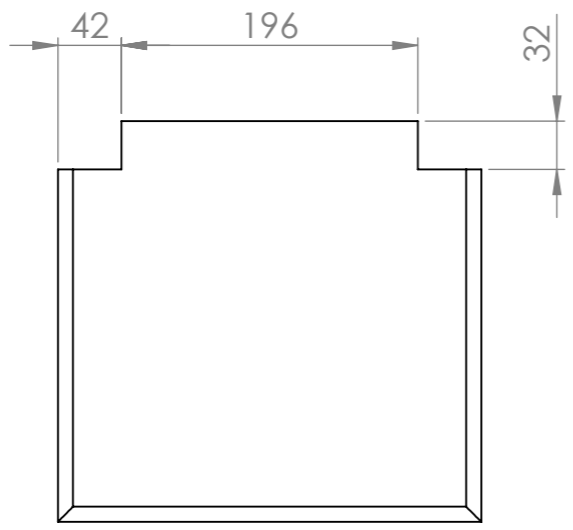
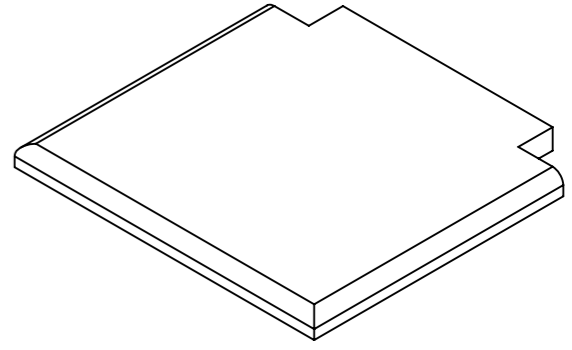


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME		SIGNATURE		DATE		TITLE: Childrens Table Assembly		
CHK'D									DWG NO. Table Cutting List 006		
APPV'D									A3		
MFG									SCALE:1:10		
Q.A							MATERIAL: Pine		SHEET 6 OF 6 Page 13		
							WEIGHT:				



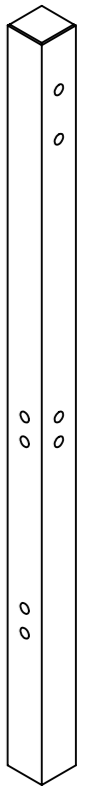
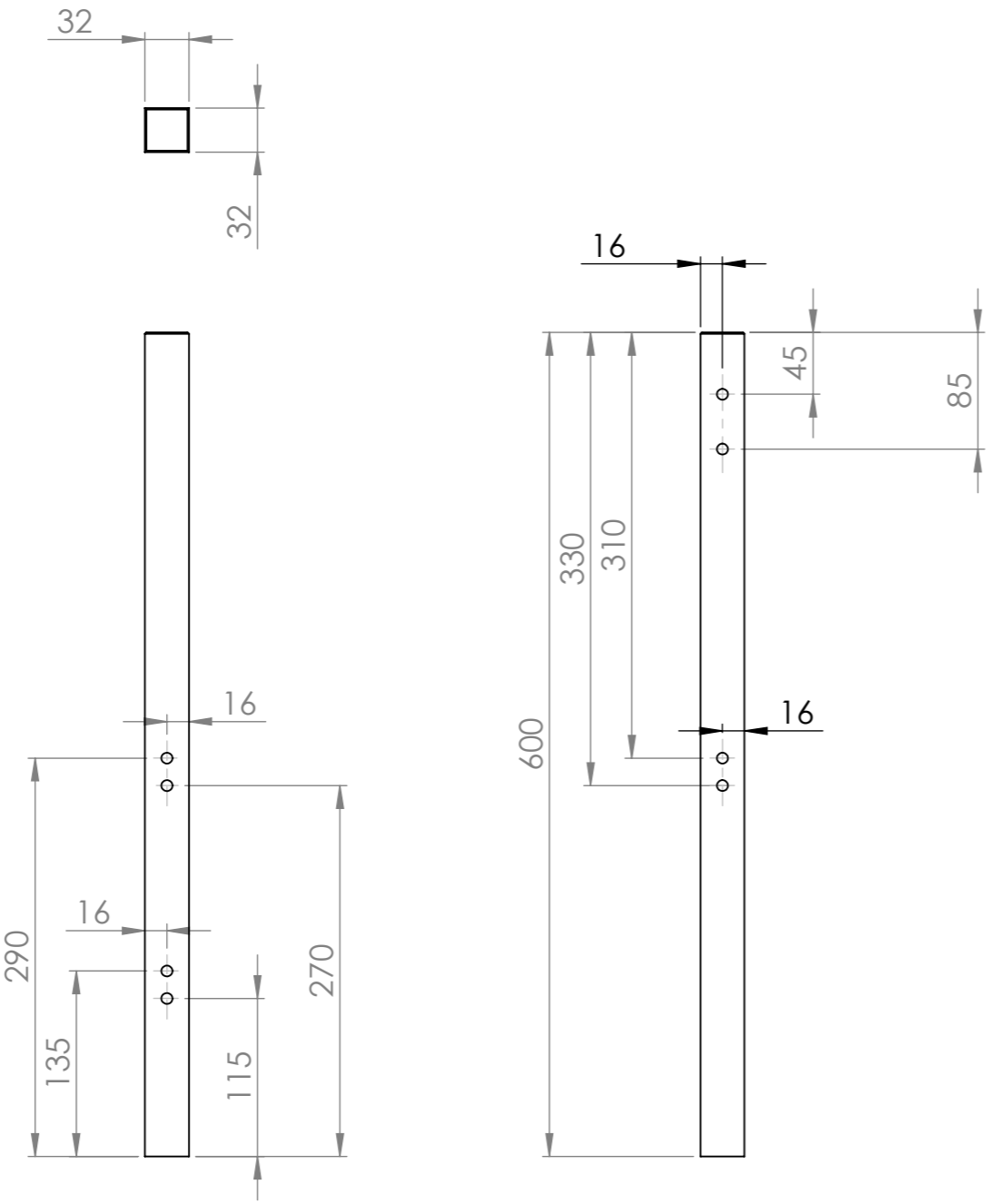
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly		
CHK'D									DWG NO. Chair Assembly 001		
APPV'D									MATERIAL: Tasmanian Oak		A3
MFG									WEIGHT:		SHEET 1 OF 14
Q.A									SCALE:1:10		

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
1	Chair Top	265	140	19	2



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:						TITLE: Childrens Chair Assembly	
DRAWN	NAME	SIGNATURE	DATE			DWG NO. Chair Top 002	A3
CHK'D							
APPV'D							
MFG					MATERIAL: Pine		
Q.A					WEIGHT:	SCALE:1:10	SHEET 2 OF 14

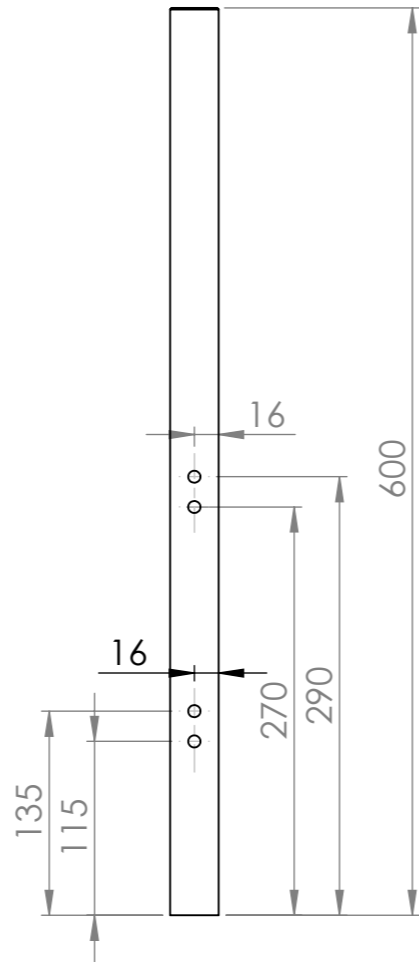
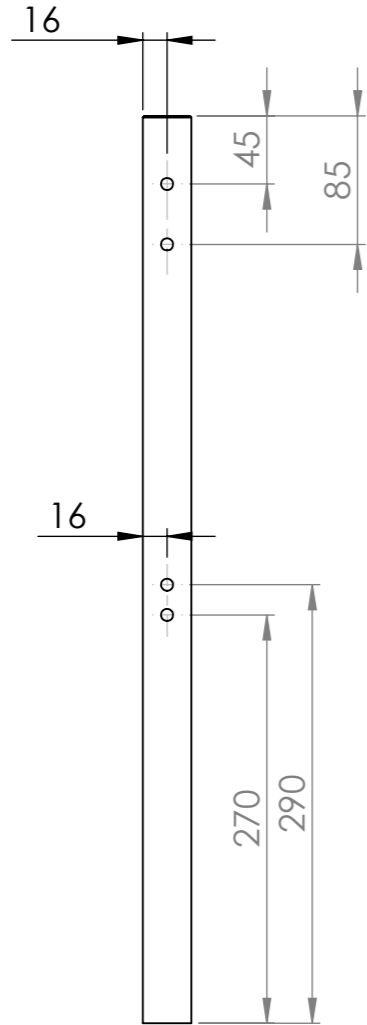
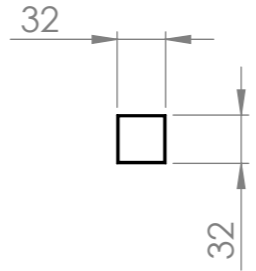
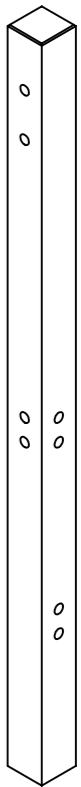
ITEM NO.	Part Name	Length (mm)	Width (mm)	Thickness (mm)	QTY.
2	Left Rail	600	32	32	1



Note: all holes need to be drilled 25mm deep

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
DRAWN		NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly	
CHK'D								DWG NO. Left Back Leg 003	
APPV'D								A3	
MFG								SCALE:1:10	
Q.A						MATERIAL: Pine		SHEET 3 OF 14	
						WEIGHT:			

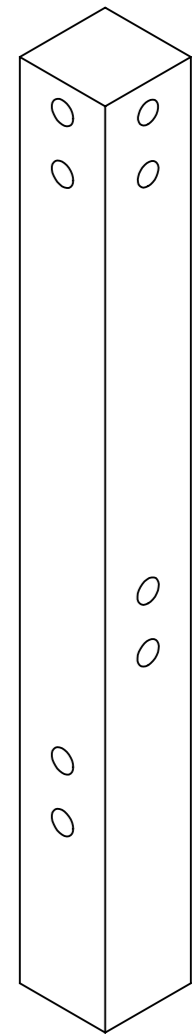
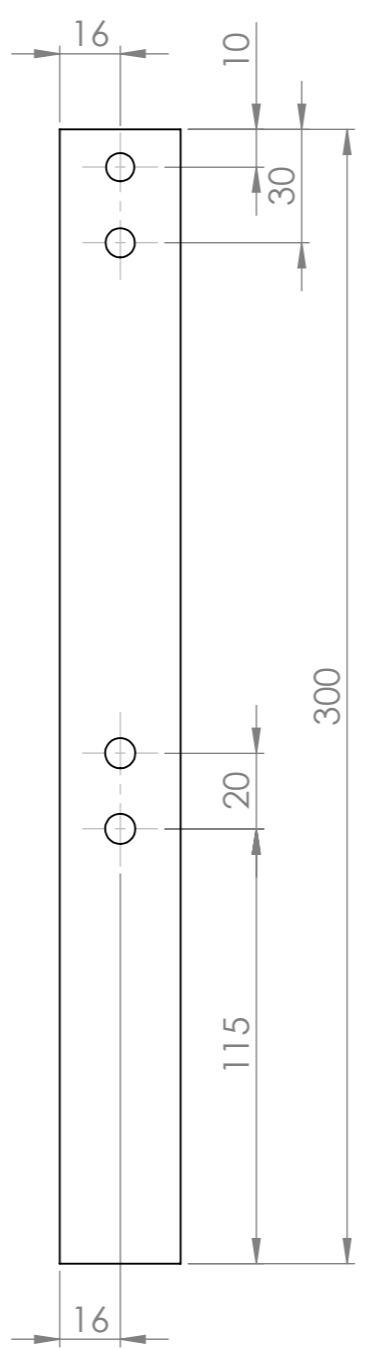
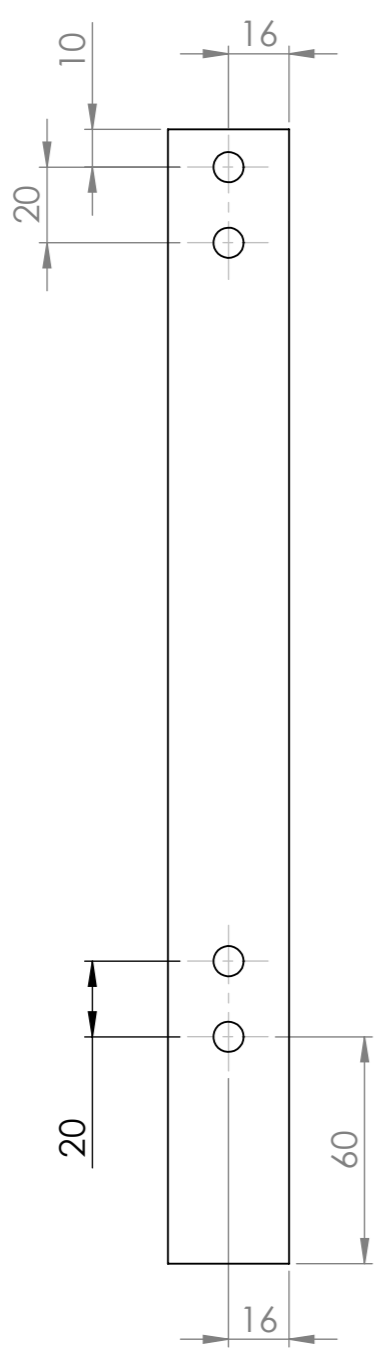
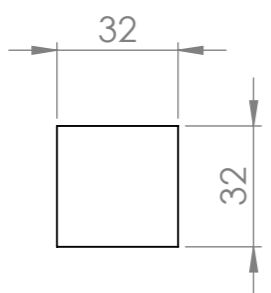
ITEM NO.	Part Name	Length (mm)	Width (mm)	Thickness (mm)	QTY.
3	Right Rail	600	32	32	1



Note: all holes need to be drilled 25mm deep

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
DRAWN		NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly	
CHK'D								DWG NO. Right Back Leg 004	
APPV'D								A3	
MFG								SCALE:1:10	
Q.A						MATERIAL: Pine		SHEET 4 OF 14	
						WEIGHT:			

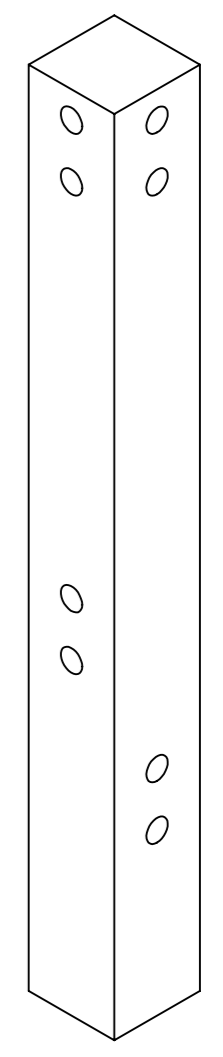
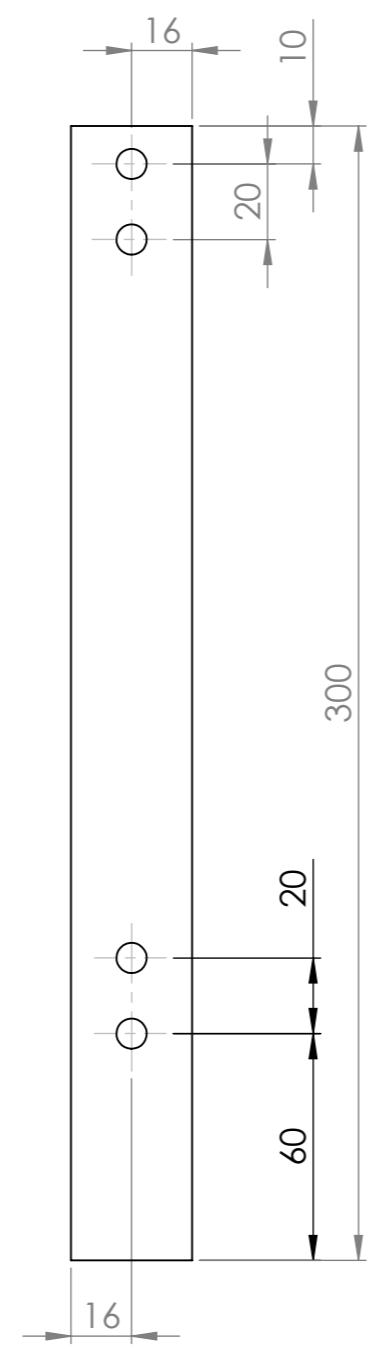
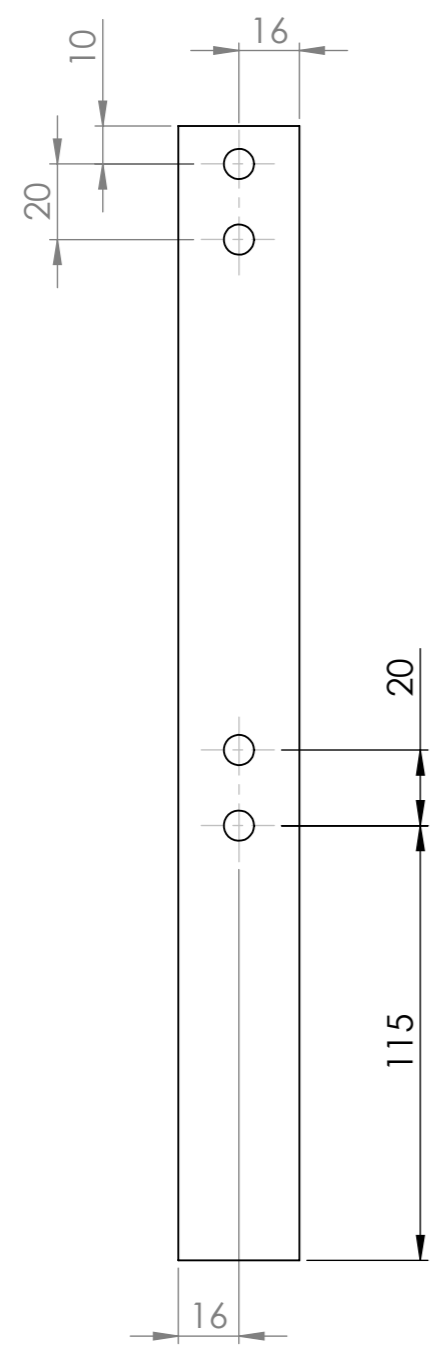
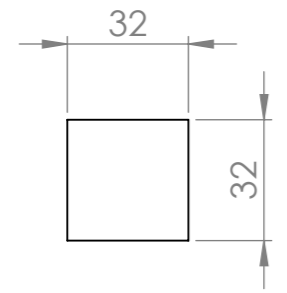
1	2	3	4	5	6	7	8
ITEM NO.	Part Name	Length (mm)	Width (mm)	Thickness (mm)	QTY.		
4	Left Front Leg	300	32	32	1		



Note: all holes need to be drilled 25mm deep

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly		
CHK'D											
APPV'D											
MFG											
Q.A									MATERIAL: Pine		DWG NO. Left Front Leg 005
									WEIGHT:		A3
									SCALE:1:10		SHEET 5 OF 14

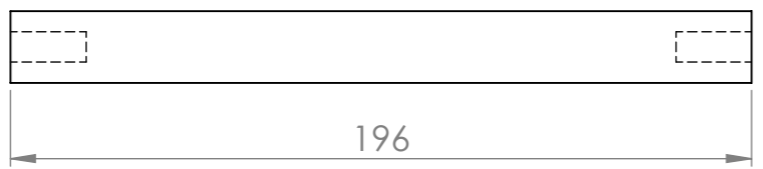
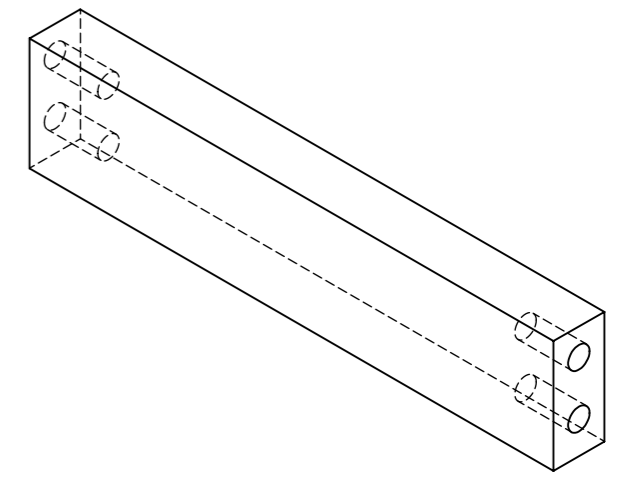
ITEM NO.	Part Name	Length	Width	Thickness	QTY.
5	Left Front Leg	300	32	32	1



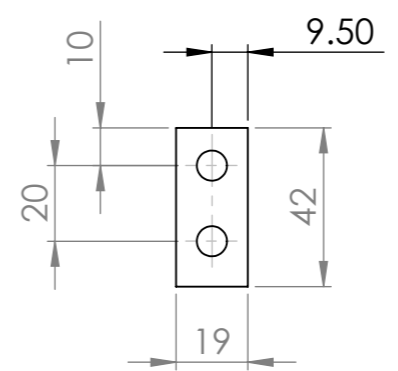
Note: all holes need to be drilled 25mm deep

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly		
CHK'D											
APPV'D											
MFG											
Q.A									MATERIAL: Pine		DWG NO. Right Front Leg 006
									WEIGHT:		A3
									SCALE:1:10		SHEET 6 OF 14

ITEM NO.	Part Name	Length (mm)	Width (mm)	Thickness (mm)	QTY.
6	Left - Right Bottom Rail	196	40	19	2

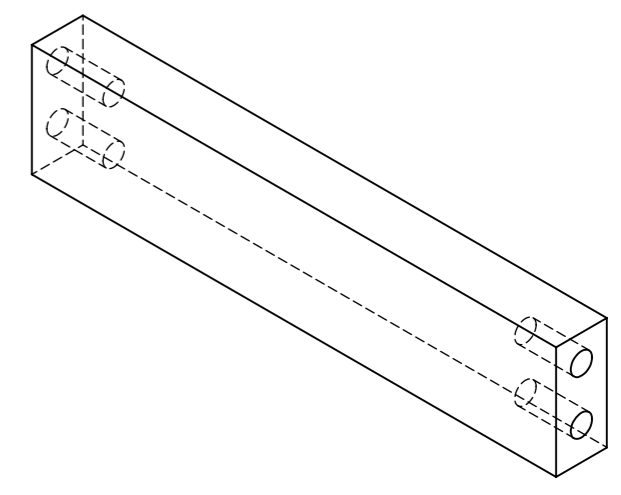


Note: all holes need to be drilled 30mm deep

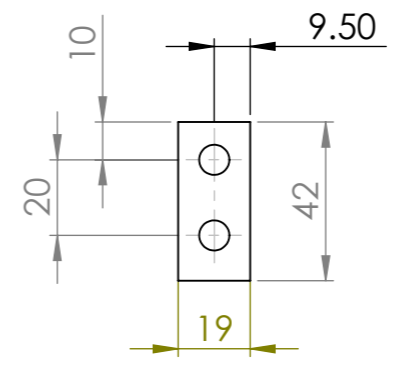
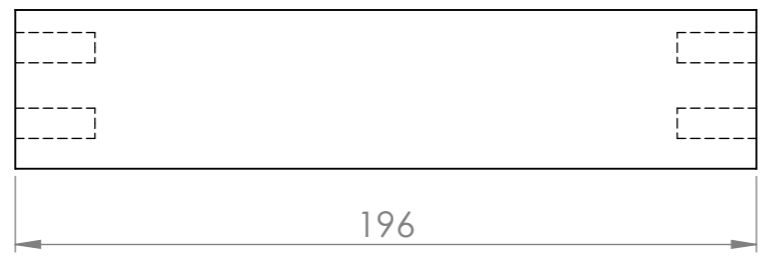


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
DRAWN		NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly	
CHK'D								DWG NO. Left/Right Bottom Rail 007	
APPV'D								A3	
MFG								SCALE:1:10	
Q.A						MATERIAL: Pine		SHEET 7 OF 14	
						WEIGHT:			

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
7	Front Bottom Rail	196	40	19	1

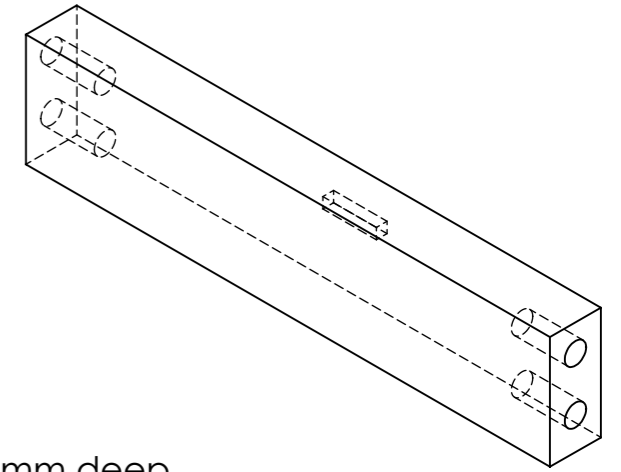


Note: all holes need to be drilled 30mm deep

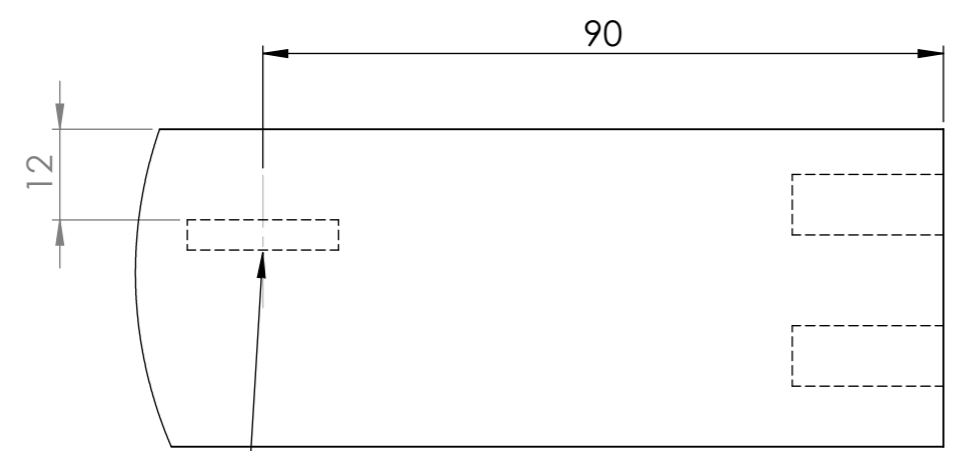
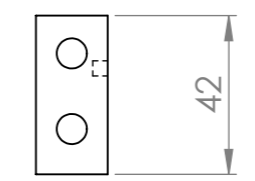
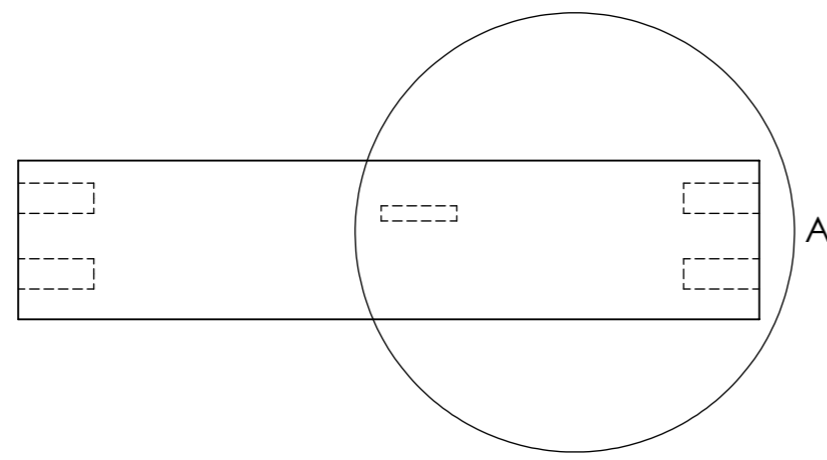
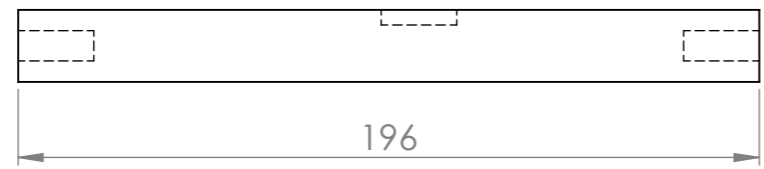


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
NAME	SIGNATURE	DATE			TITLE: Childrens Chair Assembly		
DRAWN					DWG NO. Front Bottom Rail 008		
CHK'D					A3		
APPV'D					SCALE:1:10		
MFG					SHEET 8 OF 14		
Q.A			MATERIAL: Pine				
			WEIGHT:				

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
8	Front Rail	196	40	19	1



Note: all holes need to be drilled 30mm deep

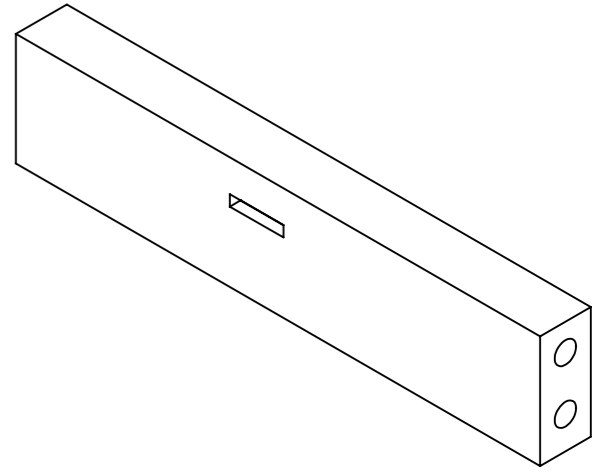


Note: This cut out is a simple biscuit joint. Measure the top of the cut out for machining. Both ends have the same dimension.

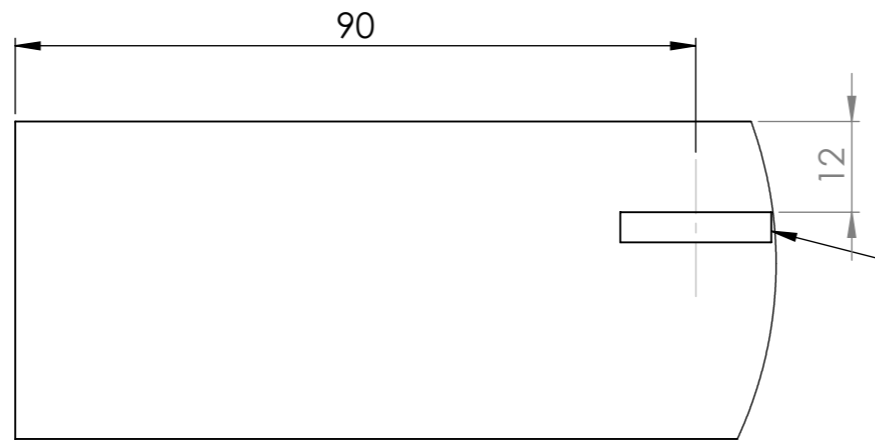
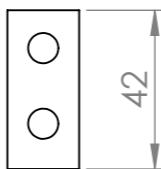
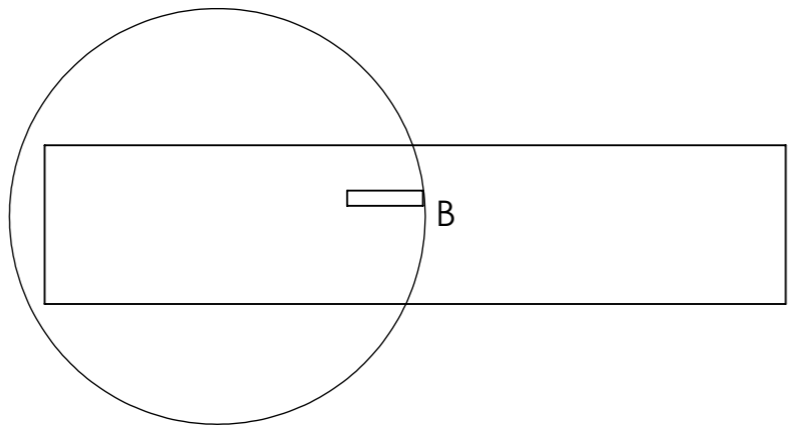
DETAIL A
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME			SIGNATURE			DATE		
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL: Pine			TITLE: Childrens Chair Assembly		
						DWG NO. Front Rail 009			A3		
						WEIGHT:			SCALE:1:10		
									SHEET 9 OF 14		

1	2	3	4	5	
ITEM NO.	Part Name	Length	Width	Thickness	QTY.
9	Back Rail	196	40	19	1



Note: all holes need to be drilled 30mm deep

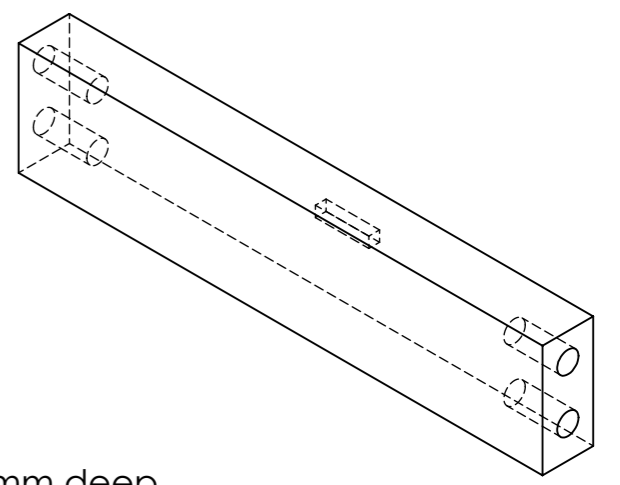


Note: This cut out is a simple biscuit joint. Measure the top of the cut out for machining. Both ends have the same dimension.

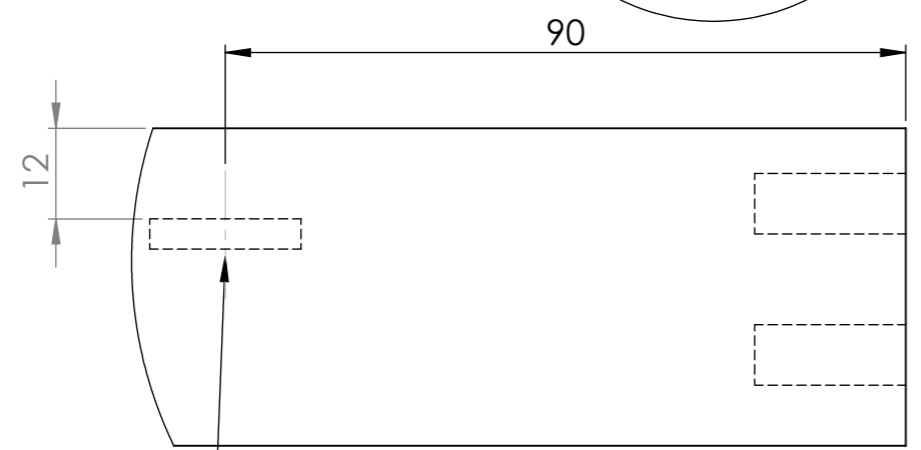
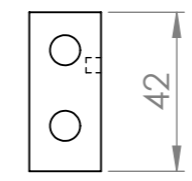
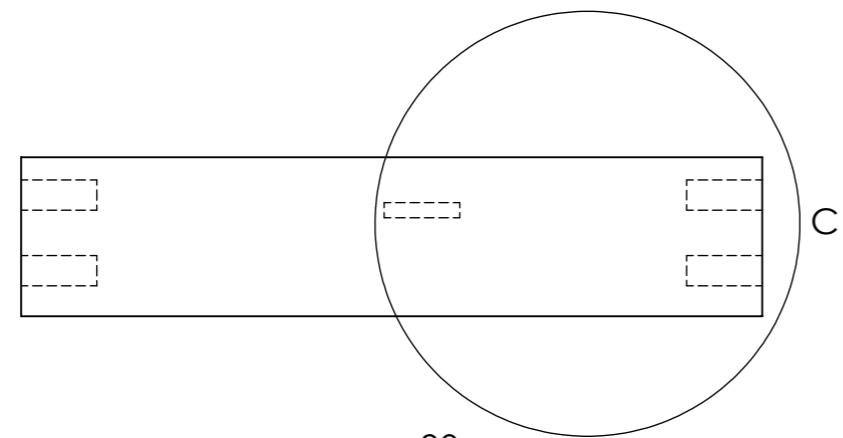
DETAIL B
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly		
CHK'D									DWG NO. Back Rail 010		
APPV'D									A3		
MFG									SCALE:1:10		
Q.A							MATERIAL: Pine		SHEET 10 OF 14		
							WEIGHT:				

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
10	Left Rail	196	40	19	1



Note: all holes need to be drilled 30mm deep

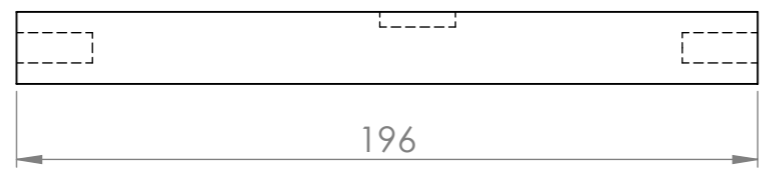
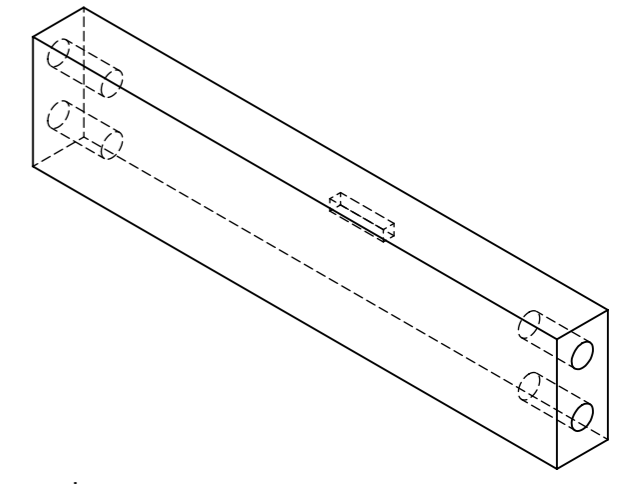


Note: This cut out is a simple biscuit joint. Measure the top of the cut out for machining. Both ends have the same dimension.

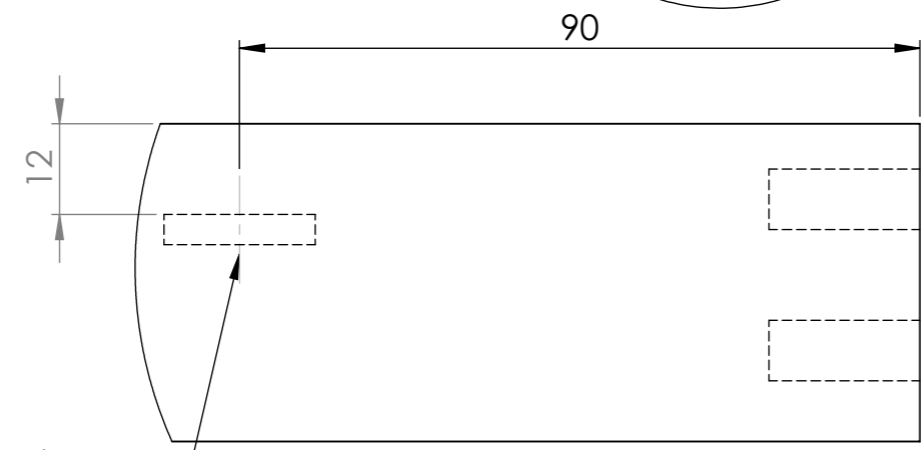
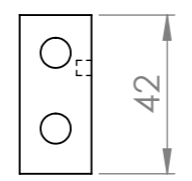
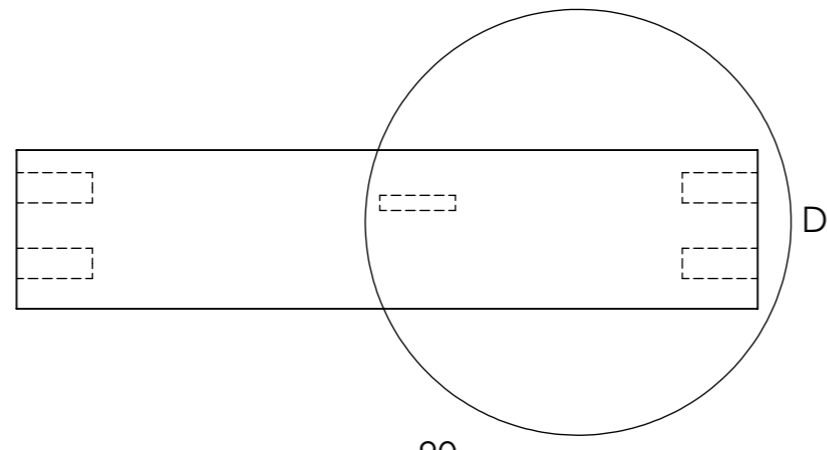
DETAIL C
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
DRAWN	NAME	SIGNATURE	DATE			TITLE: Childrens Chair Assembly	
CHK'D						DWG NO. Left Rail 011	
APPV'D						A3	
MFG					MATERIAL: Pine	SCALE:1:10	
Q.A					WEIGHT:	SHEET 11 OF 14	

1	2	3	4	5	
ITEM NO.	Part Name	Length	Width	Thickness	QTY.
11	Right Rail	196	40	19	1



Note: all holes need to be drilled 30mm deep



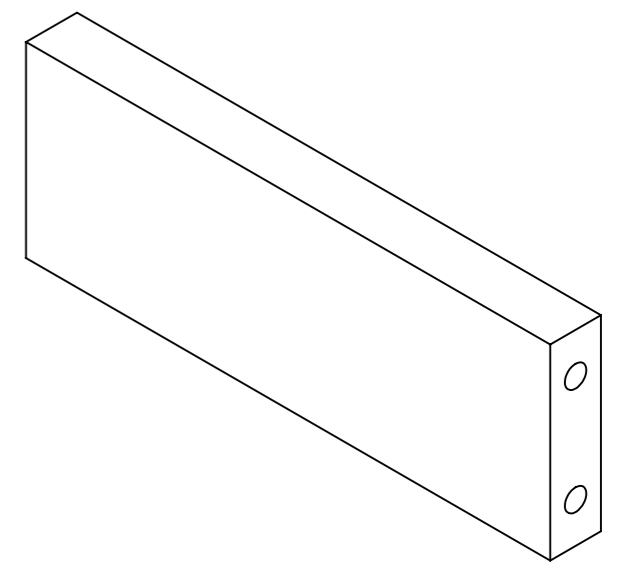
Note: This cut out is a simple biscuit joint. Measure the top of the cut out for machining. Both ends have the same dimension.

DETAIL D
SCALE 1 : 1

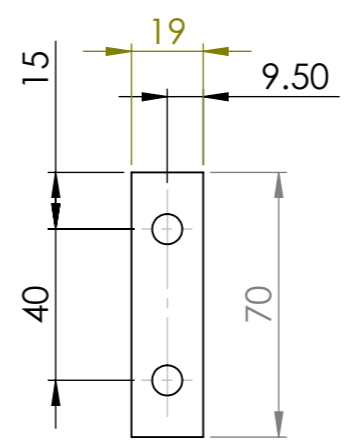
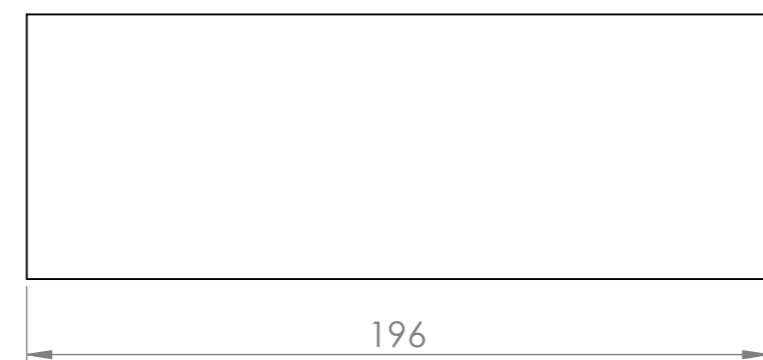
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH: Polyurethane	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
DRAWN	NAME	SIGNATURE	DATE	TITLE: Childrens Chair Assembly	
CHK'D				DWG NO. Right Rail 012	
APPV'D				A3	
MFG				MATERIAL: Pine	
Q.A				WEIGHT:	
				SCALE:1:10	SHEET 12 OF 14

1 2 3 4 5 6 7 8

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
12	Left/Right Bottom Rail	196	70	19	1



Note: all holes need to be drilled 30mm deep



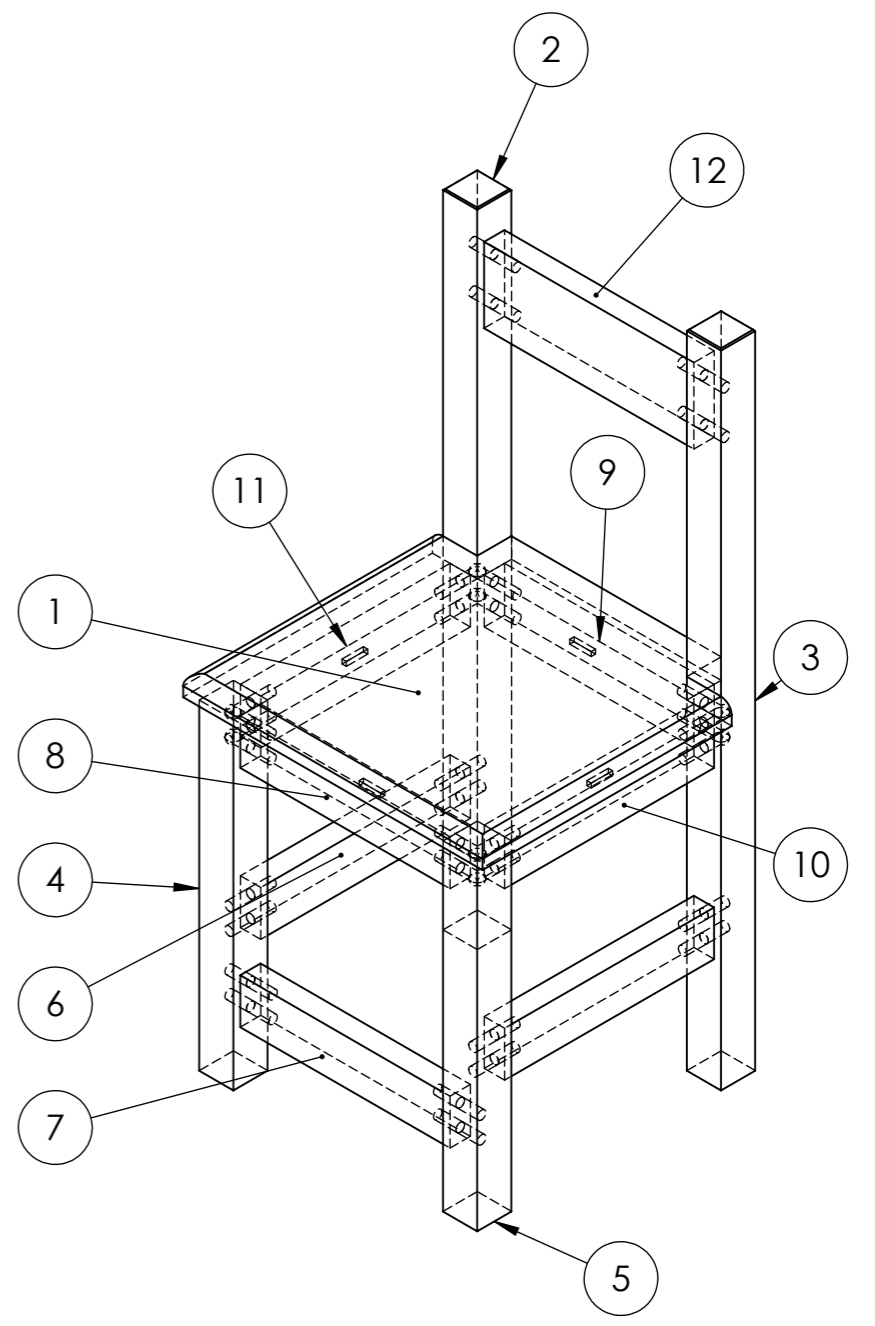
A
B
C
D
E
F

A
B
C
D
E
F

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
DRAWN		NAME		SIGNATURE		DATE		TITLE: Childrens Chair Assembly	
CHK'D								DWG NO. Right Rail 013	
APPV'D								A3	
MFG								SHEET 13 OF 14	
Q.A						MATERIAL: Pine		SCALE:1:10	
						WEIGHT:			

1 2 3 4 5 6 7 8

ITEM NO.	Part Name	Length	Width	Thickness	QTY.
1	Chair Top	265	140	19	2
2	Left Back Leg	600	32	32	1
3	Right Back Leg	600	32	32	1
4	Left Front Leg	300	32	19	1
5	Right Front Leg	300	32	19	1
6	Left/Right Bottom Rail	196	42	19	2
7	Front Bottom Rail	196	42	19	1
8	Front Rail	196	42	19	1
9	Back Rail	196	42	19	1
10	Left Rail	196	42	19	1
11	Right Rail	196	42	19	1
12	Back Rest	196	42	19	1



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH: Polyurethane		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION		
DRAWN			NAME			SIGNATURE			DATE		
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL: Tasmanian Oak			TITLE: Childrens Chair Assembly		
						WEIGHT:			DWG NO. Chair Cutting List		
						SCALE:1:10			SHEET 14 OF 14		
									A3		